

BY ROBERTA STALEY

Like many kids who love animals, I wanted to be a veterinarian when I grew up. I got a job as a teenager cleaning cages, mucking out stalls, and assisting the vets at a small- and large-animal clinic in Alberta.

I was asked to work overtime one weekend to help with a huge undertaking: spaying about 150 heifers, or young female beef cattle, that were going to a feedlot for fattening before slaughter. The spaying would involve the removal of the animals' ovaries through an incision on the left flank. This was done, my boss explained, to stop the animals from mounting each other, a neurotic behaviour that prevented optimal weight gain. It was debatable how effective the surgery was, because the activity was caused, in large part, by the stress of overcrowding. However, the feedlot operator swore by the procedure, and my boss preferred that the fee go to him rather than a competing veterinarian.

The day started early, with trucks of lowing cattle being manoeuvred up to the chutes and individual heifers driven by whoops and slaps through a squeeze chute to a head gate that closed on their necks, preventing them from moving forward or back. The squeeze was then narrowed, immobilizing the heifer, and several metal bars of the chute removed for easy access to the flank. My job was to shave the surgery site with a pair of clippers, then scrub the area three times with brown iodine soap and water from a hose. Afterwards, the veterinarian stepped forward, clad, as I was, in forest-green overalls and black rubber boots. He sliced the animal open with a scalpel, leaving an incision long enough for him to enter the abdomen with two hands. The vet probed inside to find the long strings of fallopian tubes and followed them to the ovaries, which he cut off and tossed on the concrete floor. Boluses of



UBC master's student Joanna Makowska is working to find a more humane way to euthanize the millions of rats used for medical experiments. Roberta Staley photo.

# Humane husbandry

Researchers in UBC's animal-welfare program tackle hard questions—like how much pain animals really feel

antibiotics were dropped into the bloody hole. The vet then sutured shut the abdominal-muscle wall and thick hide. As a fat needle of antibiotics was jammed in the cow's rear, the head gate was opened and the rolling-eyed animal launched itself out of the chute to the safety of a pen.

At no point was an analgesic or freezing injected into the animal. With such a large number of cattle, freezing would have easily doubled the time it took to perform surgery, hence doubling the vet bill.

As I hosed gallons of coagulated blood and cow shit down the large square drains, I wondered miserably whether I should run out of the clinic and call the SPCA or police.

I did neither.

**THAT WAS THE EARLY** 1980s. Thankfully, that practice is no longer part of animal husbandry or veterinary medicine, says Marina von Keyserlingk, an associate professor in the University of British Columbia's animal-welfare program in the faculty of land and food systems.

Keyserlingk, standing on a green lawn at the bucolic UBC experimental dairy farm, a 150-hectare spread about 100 kilometres from Vancouver, outside Agassiz, is obviously disturbed by my story. The fact that this medical procedure is now considered unacceptable is just one indication of changing attitudes toward not only farm animals but pets and wild creatures, she says. And the research coming out of the UBC animal-welfare program is at the vanguard of these changes.

The 10-year-old program—one of only three in Canada—is revolutionizing animal care among veterinarians, producers, ranchers, and shelter operators, as well as causing provincial and federal legislators to take notice.

Unlike science, and its long history of positivism, or study of the observable, the animal-welfare program is rooted in the a priori assumption that what an animal feels should drive research. However, what an animal feels is not necessarily subject to direct observation. Therefore, the program's professors and researchers—graduate students from around the globe working on master's and doctoral degrees—are developing ways to get inside the heads of animals to determine how comfortable they are, physically and emotionally, in their surroundings. "This is one of the last frontiers of science," says Dan Weary, cofounder of the animal-welfare program. "In order to create a better world for animals, we have to understand them better."

In a world of ever-narrowing profit margins for protein producers, economic considerations take precedence over welfare issues, Weary says. Hence, those in the animal-welfare program seek to develop husbandry practices that will maximize profit for the producers as well as reduce animal suffering while allowing the beast to express

animal welfare," Weary says.

Why bother creating a better world for animals? If you ask a dog owner devoted to her mutt Max, you will receive a look of contempt. Max's owner intuits when Max is bored, hungry, upset, tired, or embarrassed. She ensures Max has a happy, fulfilling life.

Such assumptions about emotion are often dismissed as wishful anthropomorphizing: attributing human traits to animals. Modern attitudes toward animals are steeped in the thoughts of Descartes and Aristotle, as well as Christianity, Islam, and Judaism, which assert dominion over animals. Descartes declared animals "automatons", while Aristotle created a hierarchy in which moral status was determined by rationality. At the top of the hierarchy were upper-class Greek men; the lowest were animals, which existed to serve the hierarchical pinnacle.

As a counterpoint to such philosophical heavyweights, Weary looks to John Stuart Mill, who postulated that it is never possible to know what is going on inside a person's head, although it is possible to infer what the other feels by an empathetic transference of experience.

So animals may feel pain, but how does this become an ethical concern? Temple Grandin, the renowned animal scientist who designed facilities in which half the cattle in the United States are handled, attributes a complex range of emotions to animals, based upon physiology. The human brain is capped by a neocortex that handles the higher cognitive functions of language and reasoning. Below the neocortex are the subcortical, or lower-brain, structures. Emotions and life-support functions are located here in both the human and the animal brain. "If you remove the neocortex, you can't tell an animal brain apart from a human brain," Grandin writes in her book *Animals in Translation*.

If animals are capable of "human" emotions, is it merely a communication problem between people and animals that results in us giving our furred and feathered friends less than optimal—and sometimes distressing—care? If animals feel what we feel, are we ethically obligated to treat them with, well, humanity?

**AT THE UBC** experimental farm, a newborn calf lies in golden straw beside its Holstein mother, opaque white afterbirth still wrapped around one limb. The cow, legs tucked beneath her after a long and difficult birth, vigorously licks her offspring. Several hours later, the calf, his hair fuzzy and dry after the tongue bath, has been moved into his own stall in the calf barn. Those first few hours are the only time he will ever know a mother.

Taking dairy calves away from their mother hours after birth is a fact of modern farming; it is how consumers get their cheese and milk. Pregnancy stimulates milk production, so the cows

are impregnated by artificial insemination every year. The calves are taken away immediately so the cows can be milked twice daily. The female calves are kept to carry on as milk machines; the males are slaughtered for veal. The physical stress of producing calves and consuming a diet rich in grain so they can pump out 33 kilograms of milk daily means that dairy cows live, on average, only six years. (Beef cattle on pasture live 10 years and longer.) Some dairy cows are culled before six years of age due to lameness, infection, or decreased milk production, Weary says during a break from discussing research with the farm's grad students.

Within the dairy industry, studies out of the U.S. show that the death rate among calves is about 10 percent, although this varies between farming operations, Weary says. The mortality rate among calves at the UBC dairy farm is zero. Many factors contribute to this enviable record, one of them being a simple apparatus invented by UBC researchers that allows the calves to engage in natural suckling behaviour. A large rubber nipple with a hose leading to a tall, milk-filled white bucket is attached to the bars of the stall. The calf, which drinks about 12 litres of milk daily, can indulge at any time, in comparison to calves at other farms that are fed milk a few times a day from a bucket. As a result, stress, a precursor to illness, is markedly reduced at the UBC facility, Weary says. At the farm, there are no stress indicators such as loud, anxious mooing from the calves or compulsive suckling of the body parts of their little companions. "The calves are full and happy," Weary notes.

Mastitis is an udder infection; many postpartum women can attest to the excruciating pain it causes. Cow mastitis is caused, it was generally believed until recently, by the animals swatting their manure-smeared, bacteria-laden tails against their udders. Mastitis severely hinders milk production, so producers began docking tails to prevent the teats from getting dirty. As a result, the cows were unable to swat flies during the summer and increased their stomping and ear-shaking. "It was unpleasant for the cow," Weary says. UBC's researchers convinced one producer with a large herd to experiment: dock half his animals' tails and leave the other half natural. Follow-up studies showed that docking did not improve mastitis rates. As a result, a 30,000-cow operation in Michigan has stopped the practice, Weary says. "No one else in the world thinks to do these experiments, as everyone is focused on milk production," he says.

**UBC RESEARCHERS ARE** probing other areas of animal welfare, including those involving their own laboratories. Master's student Joanna Makowska is trying to find a more humane way of euthanizing rats, millions of which are used in medical experiments each year to advance the welfare of humans. The most common form of euthanasia for rats is an overdose of carbon dioxide (CO<sub>2</sub>). However, Makowska says, CO<sub>2</sub> does not entirely fulfill the definition of *euthanasia*—Latin for "good death".

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## Humane husbandry

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If rats are placed in a chamber with a sufficient concentration to kill them, the CO<sub>2</sub> reacts with the mucus in the animals' respiratory system and forms carbonic acid. Far from being a good death, it is an extremely painful one, Makowska says. The alternative is putting the rats into a chamber and filling it slowly with CO<sub>2</sub>. Carbonic acid doesn't form; however, the rats endure dyspnea, similar to the sensation of drowning.

With the objective of developing a superior form of euthanasia, Makowska performed "approach-avoidance" tests on rats. The rats were put into chambers linked by tubes they could scamper through. Snacks were placed in one chamber, and a variety of gases—including oxygen laced with scents like peppermint to act as a control—was pumped into the chamber. If a rat was distressed by a gas, it would run out without finishing the treat. "It is an objective measure; the rat is telling us that it doesn't want to stay," Makowska explains.

Makowska has just started experimenting with the anesthetic gases isoflurane and halothane, which are used in human surgeries. She is hopeful that these gases will prove to be a more benevolent form of euthanasia. However, she is still compiling data and has not reached any conclusions yet.

Like others in the animal-welfare program, Makowska is in demand to speak about her research, and she presented her findings two months ago in Calgary at a Canadian Association for Laboratory Animal Science conference. Keyserlingk, Weary, and

the UBC program's other founder, David Fraser, fly 500,000 kilometres a year to Europe, Asia, Australia, South America, and the U.S. to discuss their findings with veterinarians, meat producers, academics, and legislators.

Legislating animal welfare is controversial in Canada. "This is deeply rooted in our resistance to the state telling us what to do," Weary says. Legislation to protect animals will only be accepted in Canada, Weary believes, if it can be shown to be founded on solid science and is "an obvious win-win situation" for the producer and animal.

Some of the program's graduates are starting to influence legislation. Geoff Urton, the farm animal welfare coordinator at the B.C. SPCA, graduated with a master's from the UBC program and presented 30 recommendations last year to the Canadian Food Inspection Agency, which works to ensure a safe food chain and regulates the welfare of farm animals. The recommendations, now under scrutiny by the agency, are all evidence-based, Urton says. "We're recommending changes backed up by scientific evidence and experience from professionals that will provide incentives for producers to increase their animal-welfare standards."

The most significant recommendation Urton made is to reduce the maximum transportation times allowed by law. Right now, cattle and sheep can legally be transported, jammed together in trucks without food or water, for 52 hours straight. "Millions of animals every year are transported like this from their farms to auction or slaughter every year in Canada," Urton says. "It's entirely inhumane and it needs to change."

Economics are an overriding factor

in such circumstances. If such cruelty is to be stopped, Urton points out, the consumer has to expect to pay more for that sizzling steak on the summer barbecue. To this end, the B.C. SPCA is working with producers who follow what Urton calls the "five freedoms" for animals: freedom from hunger and thirst; freedom from discomfort; freedom from pain, injury, and disease; freedom from fear and distress; and, lastly, the freedom to express normal behaviour that promotes well-being.

Urton says the SPCA has certified 22 farms in B.C. that follow the five freedoms for chickens, cattle, and pigs. (Their products display a red SPCA logo.) Hens, for example, are allowed to perch, build nests, lay eggs, indulge in dust baths, and peck in the earth. In order to ensure a healthy environment and, thus, food chain, the creatures at these special farms have lots of space to prevent overcrowding and contact with feces, both disease precursors. But such freedom hits customers' wallets, Urton notes. "The consumer has to understand that paying more for a product that has been certified to higher animal-welfare standards supports a farmer who has made a financial commitment to ensuring those standards."

**SUCH CHANGES MAY** seem simple but, for the animal, they are profound—even a matter of life and death, says Nadine Gourkow, who earned a master's degree from the UBC program by studying cat behaviour at shelters. Gourkow's initial assessments of caged cats awaiting adoption were damning. "I realized that the welfare of the cats was really poor. When I walked in the room,

the cats were in their litter boxes, attempting to hide—little faces showing big, dilated pupils. These animals were fearful and highly stressed."

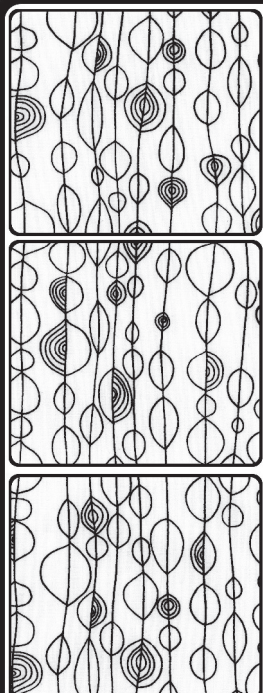
Stressed cats hiss, snarl, and swipe with unsheathed claws. Aggressive cats sometimes end up euthanized. Gourkow measured the stress levels of the cats in different environments and devised a dual-function "hide, perch, and go box". It provided a hiding place at the shelter, thus reducing stress levels. When the animal was adopted, the box folded into a carrier for transporting the feline home. As a result, cats adapted to the shelter environment much more quickly, becoming charming, happy, and adoptable. Adoption waiting times, in fact, decreased by a third, says Gourkow, who also created an award-winning video called *The Emotional Lives of Cats*, part of a four-hour course that shelter workers all over the world now take. As well, shelters as far away as New Zealand have put in orders for the hide-and-perch box, says Gourkow, who has taken leave from her B.C. SPCA job as animal-welfare research manager to pursue a PhD in cat welfare at the University of Queensland in Australia.

Animal welfare extends beyond domesticated beasts. Sara Dubois, manager of the B.C. SPCA's wild-animal rehabilitation centre, or Wild ARC, also graduated with a master's degree from UBC's animal-welfare program. Dubois surveyed B.C.'s two dozen wildlife-rehabilitation centres to assess standards, relations with government, and public perceptions of the facilities. She was then hired in 2004 by Wild ARC, which treats and rescues about 1,700 injured or abandoned wild animals a year. This year,

Dubois conceived recommendations for changes to the Wildlife Act of British Columbia, currently under review by the province. Her recommendations include changing standards related to non-native species such as tigers, lions, and alligators, which are currently considered domestic animals under provincial law. Dubois also made recommendations against several government-proposed changes to the Wildlife Act. Victoria has set a target of increasing the number of hunters in the province by 20,000 in the next 10 years. The Liberals are also proposing to allow children as young as 10 to hunt, and to allow new hunters to "try the sport under the direct supervision of a licensed adult hunter, but without the requirement to take the CORE exam", reads the discussion paper. (CORE tests hunters' ability to handle a firearm, as well as their knowledge of hunting regulations.)

Dubois has recommended against these changes; she fears that thousands of wild animals will be crippled by amateur, sloppy marksmen and left to die excruciating, lingering deaths.

The veterinarians in Alberta who spayed heifers without anesthetic gave priority to economic considerations, not ethical ones. Their actions were not uniquely cruel, however, but part of a ubiquitous mindset. The scientists in the UBC animal-welfare program are working to change that through research. But, as Weary says, public support will be a key to ensuring researchers' findings are put into practice. If we end up spending more for our food to ensure that animals live well, it is a modest exchange when we consider that animals make the ultimate sacrifice—giving up their lives—to nurture us. ♦



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